

CLAIMS**WHAT IS CLAIMED IS:**

5 1. A satellite communications system for distributing information to user terminals located within a plurality of spot beams, the satellite communications system comprising:

 a communications satellite in a geosynchronous orbit;

 a plurality of hubs each located within a respective spot beam, and adapted to:

10 route information received from a first user terminal located within a first spot beam via the communications satellite to a second user terminal located within a selected one of the spot beams via the communications satellite;

 wherein the communications satellite is adapted to:

15 receive the information according to a first protocol from the first user terminal;

 transmit the information according to the first protocol to a first hub located within a selected one of the spot beams;

20 receive the information according to a second protocol from the first hub; and

 transmit the information according to the second protocol to a second user terminal located within a selected one of the spot beams.

25 2. The satellite communications system according to Claim 1 wherein each of the spot beams is spatially isolated from the other spot beams.

 3. The satellite communications system according to Claim 1 wherein the first hub is located within the first spot beam.

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4. The satellite communications system according to Claim 1 wherein the first hub located within one of the spot beams other than the first spot beam.

5. The satellite communications system according to Claim 1 wherein the communications satellite is further adapted to:

transmit the information to the second user terminal at a first frequency; and
transmit the information at a second frequency to a third user terminal located within a selected one of the spot beams.

10 6. The satellite communications system according to Claim 1 wherein the communications satellite is further adapted to:

transmit the information to the second user terminal at a first polarization; and
transmit the information at a second polarization to a third user terminal located within a selected one of the spot beams.

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7. The satellite communications system according to Claim 1 further comprising a network control center adapted to assign frequencies and polarizations for the information received from the first user terminal and for the information transmitted to the second user terminal.

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8. The satellite communications system according to Claim 1 wherein the first protocol and the second protocol are the same protocol.

25 9. The satellite communications system according to Claim 1 wherein the communications satellite further comprises a router adapted to direct the information to user terminals located within a selected one of the spot beams by selecting the frequency or polarization of the information.

30 10. The satellite communications system according to Claim 1 wherein the communications satellite comprises a downlink transmitter power controller to adjust the power level at which the information is transmitted to the second user terminal.

11. The satellite communications system according to Claim 1 further comprising a wide area network interconnecting a selected subset of the hubs.

12. A user terminal for communicating information with other user terminals through a satellite communications system, the satellite communications system including a communications satellite in geosynchronous orbit and a plurality of hubs, the communications satellite including an antenna, each hub located in one of a plurality of spot coverage areas formed by the antenna, the user terminal being adapted to:

transmit information to one of the hubs via the communications satellite according to a first protocol; and

receive information from the hub via the communications satellite according to a second protocol.

13. The user terminal according to Claim 12 wherein the user terminal is located in the spot coverage area in which the hub is located.

14. The user terminal according to Claim 12 wherein the user terminal is located in one of the spot coverage areas other than the one in which the hub is located.

15. The user terminal according to Claim 12 wherein the first protocol and the second protocol are the same protocol.

16. A method for communicating between user terminals through hubs, the user terminals being located in spot coverage areas defined by a spot beam antenna on a geosynchronous communications satellite, each of the hubs located in a respective spot coverage area, the method comprising the steps of:

5 transmitting a first signal from a first user terminal to a hub through the satellite according to a first protocol; and

receiving a second signal at a second user terminal from the first hub through the satellite according to a second protocol.

10 17. The user terminal communicating method according to Claim 16 further comprising the steps of:

at the hub, transmitting the second signal at a selected frequency and a selected polarization to the satellite; and

15 at the satellite, routing the second signal to at least one of the spot coverage areas based on the frequency and polarization of the second signal.

18. The user terminal communicating method according to Claim 16 wherein the first signal transmitting step comprises transmitting the first signal from the first user terminal through the satellite to a first hub located in a different spot
20 coverage area.

19. The user terminal communicating method according to Claim 16 further comprising the step of receiving the second signal at a third user terminal, wherein the second user terminal and the third user terminal are located in different
25 spot coverage areas.

20. The user terminal communicating method according to Claim 16 further comprising the step of receiving the second signal at user terminals located within each of the spot coverage areas.

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21. The user terminal communicating method according to Claim 16 further comprising the step of receiving the second signal at a third user terminal, wherein the first, second, and third user terminals are located in the same spot coverage area.

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22. The user terminal communicating method according to Claim 16 further comprising the step of communicating between at least two of the hubs through a ground-based communications link.

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23. The user terminal communicating method according to Claim 22 wherein the communicating step comprises communicating over a wide area network.

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24. The user terminal communicating method according to Claim 16 further comprising the step of assigning, in a network operations control center, frequencies and polarizations to the hubs and user terminals.

25. A frequency-based router circuit for use in a satellite communications system, the satellite communications system comprising a ground hub; a communications satellite; and a plurality of user terminals located in a plurality of spot coverage areas,

5 the router circuit comprising:

a first demultiplexer for separating an inter-beam signal from a plurality of intra-beam signals;

a second demultiplexer for separating the intra-beam signals; and

10 a router adapted to route each of the inter-beam signal and the intra-beam signals to respective spot beam antennas on the satellite.

26. The frequency-based router circuit of Claim 25 further comprising a plurality of downconverters for frequency converting respective inter-beam and intra-beam signals.

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27. The frequency-based router circuit of Claim 25 further comprising a power adjust circuit for setting the output power level of a selected at least one of the inter-beam signal and the intra-beam signals.